REMARKS

INTRODUCTION

In accordance with the foregoing, no claims have been amended. Claims 1-15 are pending and under consideration.

CLAIM REJECTIONS – 35 USC 102

At numbered paragraph 4, claims 1-4 and 6 were rejected under 35 U.S.C. 102(b) as being anticipated by Maeda (US 6,107,771) (hereinafter "Maeda"). This rejection is traversed.

Maeda discloses a move command correction method and servo control system with correction of move command. In Maeda, the position/speed/current control circuit 3 finds a speed command on the basis of the (corrected) positional deviation, then finds a torque (current (command) through speed loop control performed on the basis of the speed command and an amount of speed feedback from the position/speed detector 6, controls driving of a servo motor 5 by controlling a servo amplifier 4 through current loop processing performed on the basis of the torque (current) command and a feedback value of dive current detected by a current detector provided in the servo amplifier 4, and controls driving of a table or a tool 8. Maeda column 5, line 61 – column 6, line 5.

The positional difference correcting controller 9 monitors the move command Pc issued from the numerical control device 1 and outputs the first amount of correction, predetermined for every machining shape, according to a predetermined pattern, when a sign of the move command Pc is reversed, that is, a direction of movement of the servo motor as a command from the numerical control device 1 is reversed. The first amount of correction outputted from the positional difference correcting controller is added to the positional deviation to correct the positional deviation. Then, the corrected positional deviation is inputted into the position/speed/speed current controller 3, and further into the learning controller 2. Maeda, column 6, lines 9-39.

Claims 1-4 and 6

Claim 1 recites: "...velocity command determining means for determining and outputting a velocity command at every predetermined period based on a deviation between a position

command from a host controller and a position feedback signal from a position detector..." In contrast to claim 1, Maeda discloses that the position/speed/current control circuit finds a speed command on the basis of the corrected positional deviation. The corrected positional deviation is found when the positional difference correcting controller monitors the move command issued from the numerical control device and outputs the first amount of correction when a sign of the move command is reversed, that is, a direction of movement of the servo motor as a command from the numerical control device is reversed. Claim 1 recites velocity command determining means for determining and outputting a velocity command at every predetermined period. Determining and outputting a velocity command periodically, as recited in claim 1, distinguishes over Maeda because Maeda discloses outputting a speed command based on the corrected positional deviation. The corrected positional deviation is only found when a sign of the move command is reversed.

Further, Maeda is directed to correction of a move command (motion command) by adding a predetermined amount of difference between a commanded position and an actual position to the move command, in addition to correction of a position deviation using a learning controller 2. Although Maeda discloses adding the amount of difference to the move command when a sign of the move command is reversed, it is clear that Maeda fails to disclose or suggest correction means for correcting a velocity command (or torque command) outputted from velocity command (or torque command) determining means based on correction data for a predetermined time, as recited in claim 1.

Claims 2-4 and 6 are dependent on claim 1 and are therefore believed to be allowable for the reasons discussed above.

Withdrawal of the foregoing rejection is requested.

CLAIM REJECTIONS – 35 USC 102

At numbered paragraph 5, claims 10-13 and 15 were rejected under 35 U.S.C. 102(b) as being anticipated by Seoung et al. (US 5,666,034) (hereinafter "Seoung") or Seong et al. (US 5,773,938) (hereinafter "Seong").

Seong discloses a method for controlling velocity of a rotary motor and an apparatus therefor. In Seong, the current controller 23 outputs a torque command to the motor 25 in response to the input current command i*. A third adder A5 in the motor 25 subtracts the

applied disturbance from the torque command applied from the current controller 23, to output a corrected torque command τ^*. The velocity of the motor 25 expressed as a transfer function 1/JS is controlled according to torque command τ^*. Seong, column 5, lines 18-25.

Claims 10-13 and 15

Claim 10 recites: "...torque command determining means for determining and outputting a torque command at every predetermined period based on a deviation between a velocity command and a velocity feedback signal from a velocity detector, the velocity command being obtained based on a deviation between a position command from a host controller and a position feedback signal from a position detector..." In contrast to claim 10, Seong discloses that a third adder in the motor subtracts the applied disturbance from the torque command applied from the current controller, to output a corrected torque command. Seong does not disclose outputting a torque command based on a deviation between a velocity command and a velocity feedback signal where the velocity command is obtained based on a deviation between a position command from a host controller and a position feedback signal from a position detector as is recited in claim 10. A torque command based on a velocity command and a velocity feedback signal, as recited in claim 10, distinguishes over Seong because the torque command in Seong is based on input current command.

Seong discloses a learning compensator 27 but fails to disclose or suggest to correct the velocity command (or torque command) outputted from the velocity command (or torque command) determining means based on the correction data for a predetermined time. The servomotor driving controller of claim 10 does not comprise a learning controller as shown in Figures 1 and 2, but comprises the correction means for correcting the velocity command (or torque command) using the correction data determined by the learning controller (or a friction model) in advance, thus patentably distinguishing over Seong and Seoung which have a learning controller in the control system.

Claims 11-13 and 15 are dependent on claim 10 and are therefore believed to be allowable for the reasons discussed above.

Withdrawal of the foregoing rejection is requested.

CLAIM REJECTIONS – 35 USC 103

At numbered paragraph 9, claims 5 and 7-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda in view of Ishikawa (US 5,907,450) (hereinafter "Ishikawa").

Ishikawa discusses a pre-read learning digital servo-control device for controlling the speed and/or position of a controlled object. Ishikawa, Abstract.

Claims 5 and 7-9 are dependent on claim 1 and are therefore believed to be allowable for the reasons discussed above. Further, claims 5 and 7-9 recite features that patentably distinguish over Maeda or Ishikawa, taken alone or in combination. For example, claim 5 recites that the correction data are predetermined for the predetermined time period from time of reversal of the position command, and said correction means corrects the velocity command based on the correction data for the predetermined time period from the reversal of the position command detected by said detecting means.

Withdrawal of the foregoing rejection is requested.

CLAIM REJECTIONS – 35 USC 103

At numbered paragraph 10, claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable over Seong or Seoung in view of Ishikawa.

Claim 14 is dependent on claim 10 and is therefore believed to be allowable for the reasons discussed above. Further, claim 14 recites features that patentably distinguish over Seong, Seoung or Ishikawa, taken alone or in combination. For example, claim 14 recites that the correction data are predetermined for the predetermined time period from time of reversal of the position command, and said correction means corrects the torque command based on the correction data for the predetermined time period from the reversal of the position command detected by said detecting means.

Withdrawal of the foregoing rejection is requested.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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